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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Jong Pyo LEE — Confirmation No. 5551

U.S. Patent Appln. No.: 10/781,665 — Group Art Unit: 2615

Filed: February 20, 2004 — Examiner: Huyen D. LE

For: DIAPHRAGM EDGE OF SPEAKER — Attorney Docket No.: 71470.0002

DECLARATION UNDER 37 C.F.R. § 1.132

United States Patent and Trademark Office
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Madam:

I, **Jong Pyo LEE**, hereby declare and state:

THAT I am a citizen of the Republic of Korea residing at 201, 1119-3, Seonbu-3 dong, Danwon-gu, Ansan-si Gyeonggi-do 425-140, Republic of Korea;

THAT I graduated of Janghang Technical High School majored in electrical engineering;

THAT I am employed by Seogyeong Hitec Co., Ltd , Korea, ultimately holding the position of Director of the Sound Research and Development Division, and that since that time, and from my 24 years of experience in the speaker industry, I have engaged in the development of the diaphragm edge of speakers which provides high sound sensitivity and smooth sound sense, as claimed in the present application;

THAT I am an expert in the field of speaker design;

THAT I am the sole inventor of the present application;

THAT I have reviewed the Office Actions of January 11, 2007 and August 23, 2007, and the responses filed thereto on May 9, 2007 and November 21, 2007, respectively; and

THAT at the time of filing the present application in the United States there were unintentional errors in the specification as originally filed;

THAT at the time the invention was made it was well known within the art, and to one of ordinary skill in the art, that the arithmetical mean deviation from the mean line of the profile (Ra), could also be termed the center line average (Ra), that the maximum height (Ry) could also be termed the maximum peak to valley roughness height (Ry), and that the ten point average roughness (Rz) could also be termed the ten point average height (Rz);

THAT at the time of invention it was also well known within the art, and to one of ordinary skill in the art, that the ten point average roughness (Rz) is not the length between the third highest peak and the third deepest trough on the section curve, as incorrectly described in the original specification at page 10, lines 16-17, but rather corresponds to the sum total of the arithmetical mean deviation of the absolute value of the heights of the highest peak through the heights of the fifth highest peak from the mean line and the arithmetical mean deviation of the absolute value of the heights of the deepest peak through the heights of the fifth deepest peak from the mean line measured in the vertical direction in the sample part, which is extracted as much as the standard length in the direction of the mean line. Therefore, the ten point height (Rz) is defined below:

$$Rz = \frac{|Y_{p1} + Y_{p2} + Y_{p3} + Y_{p4} + Y_{p5}| + |Y_{v1} + Y_{v2} + Y_{v3} + Y_{v4} + Y_{v5}|}{5}$$

THAT this fact is evidenced by Endo et al. (U.S. Patent No.: 4,925,725), which was filed prior to the present application on January 4, 1989, (U.S. Patent No.: 4,925,725) a copy of which is attached hereto. Endo et al. disclose that the "10-point average roughness H is defined as the average of the heights of five ridges from the highest ridge **41** to the fifth highest ridge **45** minus the average of the depths of 5 valleys from the deepest valley **51** to the 5th deepest valley **55**." (see Endo et al., col. 3 line 60 through col. 3, line 5).

THAT this fact is further evidenced by the definition of the ten point average roughness (Rz), which is defined by the above equation, provided in Takagi et al. (U.S. Patent No.: 5,878,313), which was filed prior to the present application on June 26, 1997, a copy of which is attached hereto. As seen in FIG. **4** of Takagi et al., "the ten-point mean roughness shall be the difference of values, being expressed in micrometer (μm), between the mean value of altitudes of peaks from the highest to the 5th, measured in the direction of vertical magnification from a straight line a that is parallel to the mean line and that does not intersect the profile, and the mean value of altitudes of valleys from the deepest to the 5th, within a sampled portion, of which length corresponds to the reference length, from the profile. The profile may be depicted by means of a probe meter, for example. The ten-point mean roughness Rz is given by the following equation:

$$Rz=[(R_1 + R_3 + R_5 + R_7 + R_9)-(R_2 + R_4 + R_6 + R_8 + R_{10})]/5$$

wherein R_1, R_3, R_5, R_7 and R_9 are altitudes of peaks from the highest to the 5th for the sampled portion corresponding to the reference length L, and R_2, R_4, R_6, R_8 and R_{10} are altitudes of

valleys from the deepest to the 5th for the samples portion corresponding to the reference length L." [*sic*] (see Takagi e al., Fig. 4, col. 8, lines 33-50);

THAT this fact is additionally evidenced by an excerpt from the Japanese Industrial Standard (JIS B0601-1994), published in 1994, a copy of which is attached hereto. The definitions provided by the JIS B0601-1994 for Ra, Ry and Rz show that they were well known at the time the invention was made, and that Rz is a mathematical description of the average height of the five highest local maxima plus the average height of the five lowest local minima, and thus cannot constitute new matter since it was well known to one of ordinary skill in the art at the time the invention was made;

THAT at the time the invention was made, I used the above recited formula to calculate the ten point average roughness (Rz), and that the definition of the ten point average roughness provided in the specification as originally filed resulted in (Rz) being described incorrectly;

THAT the specification should be corrected to state:

At Page 10, lines 9-17:

The arithmetical mean deviation from the mean line of the profile (Ra), the maximum height (Ry), and the ten point average roughness (Rz) are methods to indicate a texture (a degree of formation of an emboss) of a surface. When a function expressing a section curve showing a section of the diaphragm edge 31 is f(x), the arithmetical mean deviation from the mean line of the profile (Ra) is obtained from an equation that $Ra = \int |f(x)|dx$. The maximum height (Ry) corresponds to the length between the highest peak and the deepest trough on the section curve.

~~The ten point average roughness (Rz) corresponds to the length between the third highest peak and the third deepest trough on the section curve~~.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: July 4, 2008

2008/07/04

Jong Pyo LEE

Surface Roughness

1. Varieties of Surface Roughness Indicators

Definitions and presentations of arithmetic average roughness (Ra), maximum height (Ry), 10-spot average roughness (Rz), average concave-to-convex distance (Sm), average distance between local peaks (S) and load length rate (tp) are given as parameters indicating the surface roughness of an industrial product. Surface roughness is the arithmetic average of values at randomly extracted spots on the surface of an object.

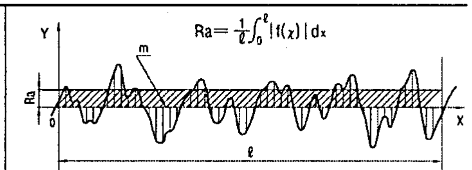
〔Center-line average roughness (Ra 75) is defined in the supplements to JIS B 0031 and JIS B 0601.〕

Typical Calculations of Surface Roughness

Arithmetical Average Roughness, Ra

A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. This portion is presented in a new graph with the X axis extending in the same direction as the average line and the Y axis representing the magnitude. Ra is represented by the equation shown at right, in microns (μm).

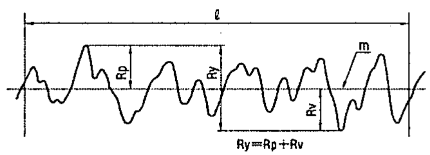
$$Ra = \frac{1}{\ell}\int_0^{\ell} |f(x)|\,dx$$



Maximum Height, Ry

A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. The gap between the peak line and the trough line is measured in the direction in which the magnitude axis extends, in microns (μm).

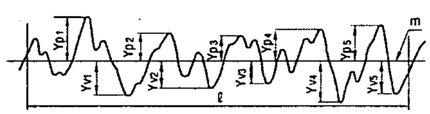
Remark : A portion without an abnormally high peak or abnormally low trough, which may be regarded as a flaw, is cut out over the reference length.



$Ry = Rp + Rv$

Ten-Spot Average Roughness, Rz

A portion stretching over a reference length in the direction in which the average line extends is cut out from the roughness curve. The average of the levels (Yp) of the highest peak to the fifth highest peak as measured from the average line and the average of the levels (Yv) of the lowest trough to the fifth lowest trough similarly measured in the said portion are added together. Rz is this sum, in microns (μm).



$$Rz = \frac{|Y_{p1}+Y_{p2}+Y_{p3}+Y_{p4}+Y_{p5}| + |Y_{v1}+Y_{v2}+Y_{v3}+Y_{v4}+Y_{v5}|}{5}$$

$Y_{p1}, Y_{p2}, Y_{p3}, Y_{p4}, Y_{p5}$ Levels of the highest peak to the fifth highest peak in the said portion with the length ℓ.

$Y_{v1}, Y_{v2}, Y_{v3}, Y_{v4}, Y_{v5}$: Levels of the lowest trough to the fifth highest trough in the said portion with the length ℓ.

Reference : Relation between Arithmetic Average Roughness (Ra) and Conventional Parameters

Arithmetic Average Roughness Ra — Standard Series	Cut-off Value λc (mm)	Graphical Representation of Surface Texture	Max. Height Ry — Standard Series	Ten-Spot Average Roughness Rz — Standard Series	Reference Ry/Rz Length ℓ (mm)	Conventional Finish Symbol
0.012 a	0.08	0.012 ~ 0.2	0.05 s	0.05 z	0.08	▽▽▽▽
0.025 a	0.25		0.1 s	0.1 z		
0.05 a			0.2 s	0.2 z	0.25	
0.1 a	0.8		0.4 s	0.4 z		
0.2 a			0.8 s	0.8 z		
0.4 a		0.4 ~ 1.6	1.6 s	1.6 z	0.8	▽▽▽
0.8 a			3.2 s	3.2 z		
1.6 a			6.3 s	6.3 z		
3.2 a	2.5	3.2 ~ 6.3	12.5 s	12.5 z	2.5	▽▽
6.3 a			25 s	25 z		
12.5 a	8	12.5 ~ 25	50 s	50 z	8	▽
25 a			100 s	100 z		
50 a	—	50 ~ 100	200 s	200 z	—	~
100 a			400 s	400 z		

* Interrelations among the three varieties shown here are not precise, and are presented for convenience only.
* Ra : The evaluated values of Ry and Rz are the cut-off values and the reference length each multiplied by five, respectively.

Drawing Indication of Surface Texture

1. Positions of Auxiliary Symbols for Surface Symbol

A surface roughness value, cut-off value or reference length, processing method, grain direction, surface undulation, etc. are indicated around the surface symbol as shown in Fig. 1 below.

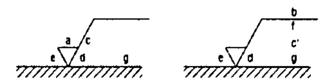
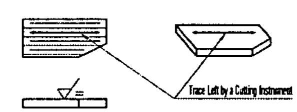
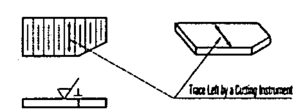
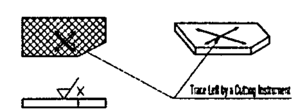
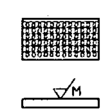
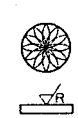


Fig. 1. Positions of Auxiliary Symbols

- a : Ra Value
- b : Machining Method
- c' : Cut-off Value, Evaluation Length
- c : Reference Length, Evaluation Length
- d : Grain Direction
- f : Parameter other than Ra (tp : Parameter/Cut-Off Level)
- g : Surface Undulation (according to JIS B 0610)

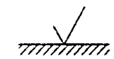
Remark : These symbols except a and f are provided when they are needed.

Remark : Under ISO 1302, a finish range should be indicated as e in Fig. 1.

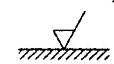
Symbol	Meaning	Illustration
=	The trace left by a cutting instrument is parallel to the projection plane in the drawing. Ex. Shaped Surface	
⊥	The trace left by a cutting instrument is perpendicular to the projection plane in the drawing. Ex. Shaped Surface (Side View) Circular Cut, Cylindrical Cut	
X	The pattern left by a cutting instrument diagonally crosses the projection plane in the drawing. Ex. Honed Surface	
M	The pattern left by a cutting instrument crosses in various directions or has no grain direction. Ex. Lapped Surface, Superfinished Surface and Surface Finished with a Front Mill or End Mill	
C	The pattern left by a cutting instrument is virtually concentric around the center of the plane in the drawing. Ex. Faced Surface	
R	The pattern left by a cutting instrument is virtually radial around the center of the plane in the drawing.	

Examples

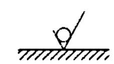
Surface Symbol



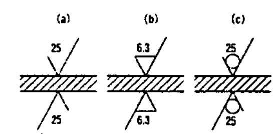
Removal of Material by Machining is Required



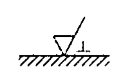
Removal of Material is Prohibited



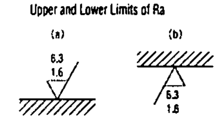
Upper Limit of Ra



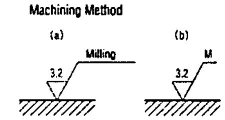
Grain Direction



Upper and Lower Limits of Ra



Machining Method



United States Patent [19]
Endo et al.
[11] Patent Number: 4,925,725
[45] Date of Patent: May 15, 1990

[54] INTERLAYER FOR LAMINATED GLASS

[75] Inventors: Gen Endo, Moriyama; Hiroyuki Tateishi, Ohmihachiman; Yoshihiro Kawata, Hino; Isao Karasudani, Ohtsu; Hirofumi Omura, Kusatsu, all of Japan

[73] Assignee: Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

[21] Appl. No.: 293,579

[22] Filed: Jan. 4, 1989

Related U.S. Application Data

[63] Continuation of Ser. No. 780,822, Sep. 27, 1985, abandoned.

[51] Int. Cl.[5] B32B 3/00
[52] U.S. Cl. 428/156; 428/220; 428/437
[58] Field of Search 428/156, 437, 220

[56] References Cited

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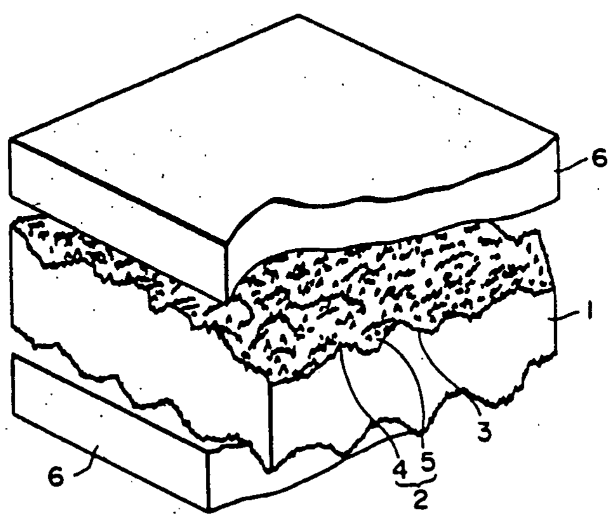
4,546,029	10/1985	Cancio et al.	428/156

Primary Examiner—Pamela R. Schwartz
Attorney, Agent, or Firm—Wenderoth, Lind & Ponack

[57] ABSTRACT

An interlayer for a laminated glass, said interlayer being composed of a film or sheet of a thermoplastic resin, at least one surface of the film or sheet of a thermoplastic resin having numerous coarse raised and depressed portions and numerous fine raised and depressed portions existing on the surfaces of the coarse raised and depressed portions, the average distance between two adjacent coarse depressed or raised portions being about 2 to about 10 times the 10-point average roughness of the coarse raised and depressed portions measured in accordance with ISO-R468.

4 Claims, 1 Drawing Sheet



US005878313A

United States Patent [19]
Takagi et al.

[11] Patent Number: 5,878,313
[45] Date of Patent: Mar. 2, 1999

[54] **DEVELOPING ROLLER AND APPARATUS**

[75] Inventors: **Koji Takagi**, Kawasaki; **Yoshio Takizawa**, Fussa; **Eiji Sawa**, Fujisawa, all of Japan

[73] Assignee: **Bridgestone Corporation**, Tokyo, Japan

[21] Appl. No.: **883,601**

[22] Filed: **Jun. 26, 1997**

[30] **Foreign Application Priority Data**

Sep. 2, 1996 [JP] Japan 8-250952

[51] **Int. Cl.**[6] **G03G 15/08**
[52] **U.S. Cl.** **399/279**; 430/120
[58] **Field of Search** 399/279, 265, 399/252, 222, 285, 286, 280, 281, 282, 283, 284; 430/120

[56] **References Cited**

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Patent Abstracts of Japan for JP 60–115421.

Patent Abstracts of Japan for JP 60–115422.

Primary Examiner—Arthur T. Grimley
Assistant Examiner—Hoan Tran
Attorney, Agent, or Firm—Sughrue, Mion, Zinn, Macpeak & Seas, PLLC

[57] **ABSTRACT**

A developing roller (1) includes a highly conductive shaft (2) and a conductive elastic layer (3). When the developing roller carring a one-component developer thereon comes in contact with or in proximity to an image forming body, the developer is supplied from the roller to a surface of the image forming body, thereby forming a visible image on the image forming body surface. The elastic layer (3) has applied to its surface a resin component having an elongation at rupture of less than 10% as measured according to JIS K7113. The developing roller ensures that images of high quality are reproduced without a drop of image density over a long period of time.

15 Claims, 3 Drawing Sheets